

DISTRIBUTION OF THE PALM WARBLER AND ITS STATUS IN MICHIGAN

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ALTHOUGH the Palm Warbler (*Dendroica palmarum*) is known in most of the eastern United States as a migrant or winter visitant with a breeding range lying almost entirely in Canada, it has been known to breed in northern Minnesota, and evidence of its breeding in Michigan and Wisconsin has accumulated in recent years. This report is concerned principally with the western form, *D. p. palmarum*, most individuals of which are distinguishable in the field from the eastern race, *D. p. hypochrysea* (see Peterson, 1947: plate 49). The western form breeds from central Ontario westward in favorable wooded habitats through Manitoba, central and northern Saskatchewan and Alberta to northeastern British Columbia and into southern Mackenzie (Rand, 1944b).

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SPRING MIGRATION IN MICHIGAN

The western race of the Palm Warbler begins its migration northward by late March (Bent, 1953:447), and reaches Michigan during late April. At Ann Arbor, Washtenaw County, Michigan, the earliest records (Wood and Tinker, 1934:44) in the first half of a 50-year period ending in 1930 were April 26 (1886 and 1888). During the second 25 years the earliest date was April 21 (1919). In this latter period 17 dates fell between April 21 and April 30, and six in early May.

Near Battle Creek, Calhoun County, Michigan, Walkinshaw observed the species on 41 different days between April 24 (1948) and May 21 (1931 and 1944). Seven observations were in April, and 34 in May. The median date on which 100 birds were observed was May 8.

AUTUMN MIGRATION

The western form of the Palm Warbler begins migration in the fall during the latter part of August (Bent, 1953:448; Soper, 1942:80; Godfrey, 1950:71). The main migration in the Canadian provinces occurs in late August and early September. Rand (1944a:123) observed two birds at Muskwa, Mile 152J, Alaskan Highway, British Columbia, September 16, 1943. At Junction Lake, Wood Buffalo Park, Alberta, Soper

(1942:80) observed small active bands in southerly migration on September 2, 1933, a few remaining until September 18. W. Ray Salt (1938:135) reported that between 75 and 100 Palm Warblers were observed, September 7 to 10, 1935, in the Rosebud District, Alberta. Godfrey (1950:71) observed the species at Flotten Lake, Saskatchewan, July 31 to September 6, 1948, but the main migration occurred between August 26 and September 6. At Moosonee, Ontario, Lewis (1939:51) noted a marked southward movement on September 18, 1938, and he and Peters (1941:114) gave the latest date as September 24, as did Hewitt (Manning, 1952:83). Along Lake Superior where the Agawa River enters Agawa Bay, Ontario, Fargo and Van Tyne (1927:8) noted the species regularly from late August to September 12 when 25 were observed. Thomas S. Roberts (1932:243-244) gave the earliest fall record in Minnesota as August 30 (1927, at Frontenac, Goodhue County) and the latest date, November 3 (1898, at Lanesboro, Fillmore County) but the average date fell in late September.

In southern Michigan, Walkinshaw has noted the species between September 5 (1955, in Muskegon County) and October 15 (1945, in Calhoun County). In Muskegon County he observed 61 Palm Warblers on 11 different dates in the fall, the median date being September 18. In Calhoun County, 86 birds were seen on 27 different dates, the median being September 25.

Wood and Tinker (1934:44) gave records for fall departure from Ann Arbor, Michigan, as September 3 (1912, earliest); and October 14 (1923, latest). Eight records fell in September; three in October.

Dendroica p. palmarum is a common migrant through central United States, rarely as far west as Montana (Saunders, 1921:148) and Nebraska, south to Louisiana where it occurs rarely in winter (Lowery, 1955:36). It is infrequent in New England in migration, but crosses the panhandle of West Virginia (Sutton, 1936:89; Haller, 1938:677).

WINTER

The eastern form of the Palm Warbler migrates from the northeastern United States and eastern Canada southwestward, wintering rarely in peninsular Florida but moderately in northwestern Florida (Howell, 1932:410) occasionally to the Keys, then westward along the Gulf States to Louisiana. Birds of the western subspecies cross this migration route enroute to and from peninsular Florida, the Bahamas and the West Indies. While on the Kissimmee Prairie from March 20 to 28, 1938, Walkinshaw observed from one to six Palm Warblers daily. Green *et al.* (1945:60) stated that the nominate race occurred commonly in southern Georgia in winter, and the *D. p. hypochrysea*, all over the state.

The western race of the Palm Warbler has been observed and collected in Bermuda (Griscom, 1937:543-544; Bent, 1953:449), at sea almost 200 miles in the North Atlantic (Scholander, 1955:228), regularly in the Bahamas (Bent; Vaurie, 1953:47; Mayr, 1953:500), in Cuba, "The commonest bird in Cuba . . ." (Barbour, 1943:115), south and east to the Virgin Islands, Puerto Rico and west to Providence Island, Honduras, and Yucatan (Bent). Northward it winters regularly to central Louisiana, Alabama, and South Carolina.

In March, 1945, Walkinshaw observed the species at the airport at Havana, Cuba, on arrival, and then commonly on the Isle of Pines, counting 98 birds (2 to 18 daily) March 13-23 (Walkinshaw and Baker, 1946:140-141).

BREEDING DISTRIBUTION

Although the Palm Warbler is of widespread occurrence in southern Canada, its breeding distribution in the northern United States is irregular (Fig. 1). Records for Minnesota were summarized by Roberts (1932:244–245), and W. J. Breckenridge stated (letter, 1956) that he knew of no additional ones. (Nests reported from Minnesota are listed in Table 1, and further discussion is presented under the topic, Nesting Habitats.)



FIG. 1. Localities of record for *Dendroica p. palmarum* in the United States during the breeding season.

Kumlien and Hollister (1903) stated there was no evidence that this species was a summer resident in Wisconsin. Two decades later, Wallace B. Grange (1924:160) found it in northern Rusk County in June and July, 1923, and observed the birds carrying food on July 8, 1923. Francis Zirrer (Feeney, 1942:84; Bent, 1953:440) stated that the Palm Warbler bred at Hayward, Sawyer County, Wisconsin. Zirrer (letter, November 27, 1955) wrote that the species was a fairly common summer resident in northwestern Sawyer and Rusk counties and northeastern Washburn County.

The accounts that follow will outline our present knowledge of the status of the Palm Warbler as a breeding bird in Michigan.

Lower Peninsula of Michigan.—On June 16, 1931, Richard E. Olsen, Humphrey A. Olsen, Mr. and Mrs. N. T. Peterson and Walkinshaw went to Lovells, Crawford County, Michigan, hoping to photograph and study Kirt-

land's Warbler (*Dendroica kirtlandii*). They had found a newly completed nest there on May 31. Although this nest was deserted, two males were heard singing and a search for nests began immediately. During the afternoon, Mr. Peterson called that a Palm Warbler was scolding him. The Olsens and Walkinshaw rushed over and soon found the female with three stubby-tailed young that must have just left the nest. The nest was not found but the young were photographed (Olsen, Olsen and Walkinshaw, 1931:614). The male was heard singing that evening and the next morning from the top of a 35-foot jack pine (*Pinus banksiana*) which stood above the level of the smaller pines where the Kirtland's Warbler was found. Two Palm Warblers were observed on June 17, and one on June 18.

Independent of this group, Leonard Wing (1933:73-74) worked through this same area during June and early July, 1931, taking the first summer specimens of the Palm Warbler for Michigan. Norman A. Wood had taken an immature female (Univ. Mich. Mus. Zool., 61610) at Tobias Harbor, Isle Royal, August 9, 1929, which was probably a migrant. Wing took an adult male (UMMZ, 67489) on June 3; two males on June 15; one male and a juvenal male, July 4 and a female July 5 (all specimens in UMMZ). During the summer he observed 15 adults and six young.

With all of the work done on Kirtland's Warbler in the jack pine area since 1931, apparently no one found another Palm Warbler until 1955. This gap may represent a real absence of the species, although it may have been overlooked due to a similarity of its song to those of several other species, the Pine Warbler (*Dendroica pinus*), Slate-colored Junco (*Junco hyemalis*), and Chipping Sparrow (*Spizella passerina*) nesting nearby.

On June 18, 1955, while searching for Kirtland's Warblers two miles west of Oscoda, Iosco County, Michigan, and one-half to three-quarters of a mile south of the highway, Mark Wolf found a Palm Warbler's nest. This nest had four young about ready to leave and one infertile egg.

Upper Peninsula of Michigan.—Walkinshaw observed a male Palm Warbler which was definitely established on territory during May, 1943, in an extensive sphagnum moss-spruce swamp in Kinross Township, Chippewa County. On June 20, 1954, W. Powell and Betty Cottrille, William A. Dyer, Russell and Vivian Mumford and he observed three Palm Warblers in a small segment of this same area. On June 23 he again found one of these warblers here.

On June 17, 1953, a group of Wilson Ornithological Society members found a singing male Palm Warbler just west of Sleeper Lake (T48N,R10W,Section 33), Luce County. Pettingill (1951:285) reported the species here also.

On June 27, 1954, Walkinshaw found a singing male in another bog about seven miles northwest of Seney, Schoolcraft County.

On June 16, 1954, C. J. Henry, John Bunnell and Walkinshaw were searching for LeConte's Sparrow (*Passerherbulus caudacutus*) on the Seney

National Wildlife Refuge, Schoolcraft County. A little west of M-Pool, near the Driggs River, as they were hiking along a ridge they observed a Palm Warbler only a few feet away. The bird, which was carrying food, scolded and wagged its tail nervously. Separating, they sat down, and in only a short time the female went to the nest, which contained five young ready to leave. Hoping to obtain photographs, a rush trip was made for cameras, and in only a short time the Cottrilles, William Dyer, Eliot Porter and Walkinshaw returned to find the nest empty. After about two hours they caught four of the young and did get some photographs. One specimen was taken (UMMZ, 136638). The young were replaced in the nest and remained there into the night, but left again the next morning. Josselyn Van Tyne and Betty Cottrille collected the nest (UMMZ); it was made of plant culms, grasses, and some ferns, and lined with feathers, including one large feather of the American Bittern (*Botaurus lentiginosus*), and some fine grasses. Both male and female fed the young, usually at intervals of about three or four minutes. During the entire day, while they were there, with the young out of the nest, the male fed two only and the female fed the other two exclusively.

On June 22, 1956, Laurence C. Binford and Walkinshaw found a singing male in Section 35, T46N,R13W, about 2½ miles east of Seney. The next day there were two singing males here and one pair was carrying food. Binford, William A. Dyer and W. Powell Cottrille found a nest with five very alert young (Fig. 2). The nest was made of grasses, lined with fine dead grasses and small feathers. When collected it weighed 5.1 grams and measured 61.4 mm. across and 34 mm. in depth. Between 5:07 and 7:31 p.m. that evening Walkinshaw was photographing the birds at the nest. The female fed the young 14 times, the male six. They always fed the nestlings insects. The next morning all five young were out of the nest. Dyer captured and banded three of them. One was four inches from the nest; another six inches; a third, 40 feet away and three feet up in a black spruce (*Picea mariana*). The first two were hidden in the dead grass which surrounded the small spruce under which the nest was located.

On June 24, 1956, just one-half mile north of the town of Seney (Section 28,T46N,R13W), Schoolcraft County, Walkinshaw found another pair of Palm Warblers feeding four alert young in a nest. This nest was in the same bog in which the one was found the previous day. It was near a dry ridge but in the border of the bog area. The nest, which weighed 7.1 grams, was built of dead grass and lined with fine grasses and many feathers. It was placed in sphagnum on the ground in a tangle of dead grass at the base of an eight-foot jack pine.

Early in the morning of June 25 all four young Palm Warblers were out of the nest. One was 16 feet northwest; another 31 feet southwest; the third 156 feet west-southwest; the fourth, 39 feet west. Three were hidden



FIG. 2. Palm Warbler feeding nestlings 2 miles east of Seney, Michigan, June 23, 1956.

in leatherleaf (*Chamaedaphne*) and dead grass combination; the fourth was sitting on a jack pine branch one foot from the dry ground on the island of thick jack pine (Fig. 3). All the fledglings were captured and banded. The female fed the young regularly, but the male refused to do so while they were being photographed.

In this area Walkinshaw found two other singing males on June 24, 1956, and observed three on July 4, 1956, one of which was carrying food to young out of a nest. These males observed on the latter date were still singing. Two singing males were found here in late June and early July, 1957, and on June 13, 1957, Walkinshaw, William A. Dyer and Dale Zimmerman found a pair feeding at least three young just out of a nest. One of these could not fly and was easily captured.

Palm Warblers were not found in 'colonies' in any Michigan areas, but rather in scattered pairs. In some areas, probably more favorable, more pairs were located than in others where solitary singing males were observed. Thus, the discovery of one pair is no guarantee that others will be found in the vicinity.



FIG. 3. Female Palm Warbler with recently-banded fledgling, one-half mile north of Seney, Michigan, June 25, 1956.

NESTING HABITATS

The eastern form of the Palm Warbler (Tyler, 1953:451) has been found nesting in two types of habitats. It frequents either the sphagnum bogs or the open barrens, building its nest on the ground or, more rarely, on low branches of the small spruce trees.

Very few nests of the western race have been found. It appears that, in addition to the brush-covered Arctic and sub-Arctic barrens, this form also nests in the same two types of habitats used by the eastern race (see Rand,

1944b). L. L. Snyder (1953:79) wrote that the western form used two types of habitats in western Ontario: dry forests of jack pine in park-like areas of mature trees or between thick stands of small trees; and the wet, black spruce bogs, usually of an open nature.

In Manitoba, August 1-31, 1936, P. A. Taverner, Ronald W. Smith, and T. E. Randall found *Dendroica palmarum* the commonest warbler at Thicket Portage, where several juveniles and adults were taken. That summer they recorded the species daily, July 18-30, at Ilford, and located a nest with five eggs at Bird in mid-July, but found only two individuals at Herchmer on June 22. Their field notes show that the species was fairly common in second-growth deciduous shrubbery (Godfrey, 1953:3, 39-40).

The Palm Warblers found in Crawford County, Michigan, in June, 1931 (no. 29, Table 1), were in completely dry area covered with Grayling sand, and grown to low-statured jack pines, with clearings and thick stands alternating. The ground cover was of grasses, bearberry (*Arctostaphylos uva-ursi*), blueberry (*Vaccinium*), wintergreen (*Gaultheria procumbens*), and sweet fern (*Myrica asplenifolia*). The area where Wolf found the nest (no. 31) in Iosco County, Michigan, was very similar to this Crawford County area. That nest was placed on the ground at the base of a jack pine.

The nest found on the Seney National Wildlife Refuge on June 16, 1955 (no. 25), was placed on a dry ridge completely surrounded by muskeg. The ridge was grown to a thin, wiry grass, some wintergreen and blueberry and a few dead bracken ferns (*Pteridium*). On the ridge were several jack pines ranging in height from 15 to 25 feet. Several yards to the south was an extensive sphagnum moss-leatherleaf bog similar to that just east of Seney. There were extensive areas of leatherleaf where no trees were located at all. Other portions of the bog were surrounded by black spruce in thick, dense stands. In a partial clearing of one of these stands of spruce, Binford, Dyer, and Cottrille found their 1956 nest (no. 26). It was situated at the base of a 4½-foot black spruce, sunken to the rim in sphagnum moss (Fig. 4). Dead grass, fine sedges, leatherleaf, Labrador tea (*Ledum groenlandicum*), swamp laurel (*Kalmia polifolia*), and rosemary (*Andromeda*) were found in the vicinity. On the dry ridges *Lycopodium*, trailing arbutus (*Epigaea repens*) and wintergreen were found. The second nest found in 1956 (no. 27) was situated in the sphagnum at the base of an eight-foot jack pine, surrounded by dead grass and sedges growing along the leatherleaf border. There were some tamaracks (*Larix laricina*) and orchids scattered through the bog also.

Francis Zirrer (W. S. Feeney, 1942:84; Bent, 1953:440) stated that in Wisconsin the Palm Warbler bred at Hayward, Sawyer County, in cedar (*Thuja occidentalis*)-tamarack-spruce bogs. Zirrer (letter, November 27, 1955) wrote: "This species is a fairly common summer resident in suitable bogs." He never found the species in thick bog forests or in treeless bog areas. It preferred situations where trees, such as tamarack, black spruce, white cedar and balsam (*Abies balsamea*), both large and small, in groups and singly, alternated with open sphagnum and bog shrubbery. The Palm Warbler rarely was found far from the rim of the bog. The nest (no. 24) Zirrer discovered on May 20, 1949, was sunken into sphagnum under the drooping boughs of a small black spruce, next to the bole of an uprooted tamarack of about 10 inches in diameter. It was made of dry swamp grass, and greenish-gray lichens from the tamarack bole, and was lined with feathers from a dead Barred Owl (*Strix varia*) found nearby.

In Minnesota, Dr. Roberts (1932:244) stated that the Palm Warbler was found in spruce-tamarack bogs, where the nests were sunken to the rim in sphagnum hummocks and surrounded by small, shrubby plants, but open from above. The nests in Minnesota (nos. 20-21) were made of coarse grass and roots, lined with fine grass and rootlets.

TABLE 1
NESTS OF THE WESTERN PALM WARBLER

No. Locality	Date	Breeding Record ¹	Observer	Published Record or Specimen
1. ONTARIO, Moosonee, Cochrane District, 51°N., 80.5°W.	July 11, 1939	Nest, 5 eggs	T. M. Shortt	(Royal Ontario Mus. Zool.)
2. ONTARIO, Moosonee, Cochrane District	July 17, 1939	Nest, 4 young	T. M. Shortt	(ROMZ)
3. ONTARIO, Cochrane District, McMillan Twp.	June 7, 1952	Nest, 5 eggs	Clifford Hope	(ROMZ)
4. ONTARIO, Thunder Bay District, Port Arthur, 48.5°N., 89.5°W.	June 19, 1945	Nest, 4 eggs	L. S. Dear	(ROMZ)
5. MANITOBA, Lake of the Woods, 95° + W.	Summer, 1920	1 juv., 1 female taken	Wm. Rowan	(1922:232 and letter)
6. MANITOBA, Bird, 56.5°N., 94°W.	July 3-17, 1936	Nest, 5 eggs	P. A. Tavernier R. W. Smith T. E. Randall	(Godfrey, 1953: 3, 39, 40)
7. MANITOBA, Vivian, 49.9°N., 96°W.	July 12, 1932	Nest, 4 young	T. M. Shortt	(ROMZ)
8. SASKATCHEWAN, Jeanette Lake, 54.5°N., 108°W.	August 2, 1948	1 juv., 1 female taken	W. E. Godfrey	(1950:71)
9. SASKATCHEWAN, Birch Lake near Roddick, 53°N., 106.25°W.	June 10, 1927	Nest, 5 eggs	H. H. Mitchell	(Saskatchewan Mus. Nat. Hist.)
10. ALBERTA, Belvedere, 54°N., 114.7°W.	June 12, 1923	Nest, 5 eggs	R. C. Harlow	(Bent, 1953: 441)
11. ALBERTA, Belvedere, 54°N., 114.7°W.	June 11, 1924	Nest, 5 eggs	Dick Rauch	(Bent, 1953: 441)
12. ALBERTA, Belvedere, 54°N., 114.7°W.	June 16, 1924	Nest, 5 eggs	R. C. Harlow	(Bent, 1953: 441)
13. ALBERTA, Grasslands, 54.9°N., 112.8°W.	May 23, 1933	Nest, 5 eggs	T. E. Randall	(Bent, 1953: 441)
14. ALBERTA, Fawcett, 54°N., 112.8°W.	year ?	Nest, eggs	Wm. Rowan	(Letter, 1957)
15. ALBERTA, Fawcett, 54°N., 112.8°W.	May 25, 1942	Nest, 5 eggs	L. H. Walkinshaw	(Baker and Walkinshaw, 1946:9)

	July 2, 1945	Nest, 4 eggs	T. M. Shortt	(letter)
16. ALBERTA, Chipewyan, 59°N., 111°W.				
17. BRITISH COLUMBIA, Trutch, 57.5°N., 123°W.	July 13, 1943	Adult feeding young	A. L. Rand	(1944a:123)
18. NORTHWEST TERRI- TORIES, Fort Resolution, Dist. of Mackenzie, 61°N., 113.5°W.	June 18, (year?)	Nest, 5 young	Kennicott	(Ridgway, 1889:155)
19. MINNESOTA, Marshall Co., Moose River, Mud Lake, 48°N., 96°W.	July 16-18, 1900	Three juveniles	Thomas S. Roberts	(1932:244)
20. MINNESOTA, Hibbing, 47.5°N., 93°W.	June 13, 1906	Nest, 4 young	H. F. Kendall	(Roberts, 1932:244)
21. MINNESOTA, Atkin Co., 47°N., 93°W.	June 14, 1929	Nest, 1 egg, 3 young	N. L. Huff	(Roberts, 1932:244)
22. MINNESOTA, Cass Lake, 47.5°N., 94.5°W.	July, 1916	Adults, 2 young	L. L. Lofstrom Richardson	(Roberts, 1932:244)
23. WISCONSIN, Rusk Co., 46°N., 91°W.	July 8, 1923	Adults carrying food	Wallace Grange	(1924:160)
24. WISCONSIN, Sawyer Co., Hayward, 46°N., 91.5°W.	May 20, 1949	Nest, 3 eggs	Francis Zirrer	(letter)
25. MICHIGAN, Schoolcraft Co., Seney Natl. Wildlife Refuge, 46°N., 86°W.	June 16, 1955	Nest, 5 young	John Bunnell C. J. Henry L. H. Walkinshaw	(Nest, 1 juvenile UMMZ)
26. MICHIGAN, Schoolcraft Co., Seney, 2 mi. E.	June 23, 1956	Nest, 5 young	L. C. Binford W. P. Cottrille Wm. A. Dyer	(Nest UMMZ)
27. MICHIGAN, Schoolcraft Co., Seney, ½ mi. N.	June 24, 1956	Nest, 4 young	L. H. Walkinshaw	
28. MICHIGAN, Schoolcraft Co., Seney, ½ mi. N.	June 13, 1957	Three juveniles with parents	Wm. A. Dyer D. A. Zimmerman L. H. Walkinshaw	
29. MICHIGAN, Crawford Co., Lovells, 2½ mi. S. 44°N., 84°W.	June 16, 1931	Three juveniles with parents	H. A. Olsen R. E. Olsen N. T. Peterson L. H. Walkinshaw	(Olsen, Olsen, and Walkinshaw 1931:614)
30. MICHIGAN, Crawford Co., Lovells, 2½ mi. S.	July 4, 1931	Juvenile spec.	L. W. Wing	(1933:74)
31. MICHIGAN, Iosco Co., Oscoda, 2 mi. W. 44°N., 83°W.	June 18, 1955	Nest, 4 young, 1 infertile egg	Mark Wolf	(UMMZ) (personal communication)

¹Nestsites are referred to by number in section on Nesting Habitats.

One nest contained many feathers.

At Fawcett, Alberta, between the Pembina and Athabasca rivers, Walkinshaw found a nest with five eggs on May 25, 1942 (no. 15). This area was quite open, predominantly muskeg, surrounded by forests of black spruce and tamarack, with ridges covered with jack pine. In an area of drier muskeg, not far from a ridge, he flushed the female from her nest. It was an open location with a few small dwarf birch (*Betula*) growing in close proximity. The nest was beneath one of these little birches in dead grass on a sphagnum hummock. It was made of fine grass, lined with finer grasses, feathers, and fine rootlets. It measured 80 mm. across outside, 50 mm. across inside and 42 mm. deep.



FIG. 4. Nestsite of Palm Warbler at base of black spruce (*Picea mariana*), 2 miles east of Seney, Michigan, June 23, 1956.

The area near Belvedere, Alberta, worked by Richard C. Harlow, Dick Rauch and A. D. Henderson (Bent, 1953:441) was dry muskeg and the nests (nos. 10-12) were found in sphagnum moss among scattered spruces and tamaracks. One nest was concealed at the base of a spruce seedling under a clump of dry grass growing near the top of a large hummock of sphagnum. Another was constructed of plant fibers, fine dry grasses, and fine bark shreds, and was lined with feathers of the Ruffed Grouse (*Bonasa umbellus*).

W. Earl Godfrey (1950:71) found the Palm Warbler at Flotten Lake, Saskatchewan, where it was not uncommon in summer in the alder (*Alnus*) and willow (*Salix*) bogs, and at the water edges. At Fishing Lake, Saskatchewan, Walkinshaw found a singing

male on June 11, 1947, in a clearing near the border of a black spruce swamp. Kennicott (Ridgway, 1889:155) found the Palm Warbler's nest (no. 18) at Fort Resolution, on the ground in a swamp, on a hummock, at the foot of a small spruce tree.

The nest (no. 7) found by T. M. Shortt at Vivian, Manitoba, was in a sphagnum moss hummock at the edge of a black spruce-tamarack swamp. The nest (no. 1) Shortt found at Moosonee, Ontario, July 11, 1939, was on the ground in sphagnum moss amid dwarf birch and Labrador tea in a treeless muskeg. The nest (no. 2) he found in the same area July 17, 1939, was also on a sphagnum hummock in open muskeg of dwarf birch, Labrador tea and a few scattered tamaracks. The nest (no. 16) he found at Chipewyan, Alberta, was in sphagnum at the edge of black spruce.

Thus, we see that the occurrence of *Dendroica p. palmarum* in the breeding season in Michigan and adjacent states is explicable on the basis of nesting habitats which are found consistent with those chosen by this warbler in the more northern portions of its range.

SUMMARY

The western race of the Palm Warbler nests in coniferous woodland areas of southern Canada and adjacent portions of Minnesota, Wisconsin, and Michigan, and it is known only as a migrant or winter visitant in most of the eastern United States. Details concerning the first reported nestings in Michigan are presented, and breeding habitats discussed.

Descriptive data for 31 nesting records of *Dendroica p. palmarum* are listed. Nesting areas used seem to be of two types. One is on dry plains grown to small jack pines, with clearings and a ground cover of low, spreading shrubs, such as bearberry, blueberry, wintergreen, trailing arbutus, and sweet fern. The Palm Warbler prefers such dry areas in the northern part of the lower peninsula of Michigan (the same habitat occupied by Kirtland's Warbler), and was found on similar dry ridges in spruce swamps in the northern peninsula. All nests were built in semi-open areas where the spruce and jack pine were neither too tall nor too dense, and where clearings were interspersed with patches of denser growth. The other type of nesting habitat was along the borders of spruce bogs, where clearings were grown sparingly to small black spruces, and the ground covered with sphagnum moss, leather-leaf, Labrador tea, *Andromeda*, and *Kalmia polifolia*. In northern Ontario and the treeless areas of the arctic slope of Canada, the species is found in second-growth deciduous shrubbery on the tundra. There, dwarf birch often is the predominant shrub.

With what meagre information is available, it appears that the Palm Warbler prefers to nest on the ground at the base of a small tree or shrub. Small spruces, jack pines or tamaracks are the favorite trees in Michigan; bracken fern was also used, whereas two nests from farther north were at the bases of small dwarf birches.

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